PATENT

UNITED STATES DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

INVENTION : CHILD SAFETY CLIP
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I. RELATED PATENT APPLICATION

This patent application claims the benefit under Title 35, United States Code, Section 120 of U.S. Provisional Patent Application, Serial Number 60/524,149, filed November 20, 2003.

II. FIELD OF THE INVENTION

The present invention relates to plastic clips and, more particularly, to a plastic clip that is designed to safely bend or flex in response to pressure or improper use that normally results in anomalies or breaks in a typical plastic clip.

III. DESCRIPTION OF THE PRIOR ART

Children enjoy the use of plastic clips that use connectors, couplings, and/or locking retainer mechanisms to attach to their pants, backpacks, etc... for holding a personal item, a school item such as a small thermos, or whatever else the child desires to hold or carry with them. All of these plastic clips require that the child employ a certain method to disconnect,

decouple, or unlock the devices to receive or release the item that is of particular interest to the child. The problem with these plastic clips is that, when the child desires to use the device to receive or release a particular item, the child often does not employ the method intended by the manufacturer. Rather, the child disregards this intended method, however unintentional, and proceeds to use the application of force to pull the device apart to receive or release the interested item. If the child is successful, the plastic clip ultimately experiences anomalies and/or is broken rendering the device useless for its intended purpose and then presents a dangerous device that may injure the child while the child is concentrating on the particular item that it was interested in from the beginning.

Many of these devices using connectors, couplings, locking retainer mechanisms, etc... are disclosed in the following identified patents or published patent applications.

Inventor	Issued	Title of Patent	U.S. Patent No.
Salentine	07/15/2003	Connector With Strain Relief	6,591,461
Raia	07/03/2003	Breakaway Gripper-Style Lanyard...	US2003/0121125
Nishida	12/19/2002	Locking Retainer Device	US2002/0189059
Nishida	11/26/2002	Locking Retainer Device	6,484,375
Salentine	10/17/2002	Connector With Strain Relief	US2002/0148078
DeDoes	10/01/2002	Breakaway Coupling	6,457,896
Friend	09/11/2001	Safety Coupler	6,286,190
Jackson	03/14/2000	Zipper Pull Tab	6,035,497

1	Patterson	02/09/1999	Self-Releasing Coupler	5,867,877
2	Hart	08/27/1996	Safety Snap	5,548,875
3	Anscher	12/19/1995	Swivelling Snaphook	5,475,901
4	Seron	07/02/1991	Break Away Lanyard	5,027,477
5	Summerfeld	01/14/1929	Release Snap Construction	1,752,619
6	J.F. Carpmill	04/08/1919	Hook	1,299,821

The most relevant devices for application by children are those that have two opposed ends or loops for receiving and/or retaining some article. This includes U.S. Patent 6,457,896 to DeDoes entitled "Breakaway Coupling" which discloses a breakaway coupling having a loop for receiving a connecting element. The loop includes a material reduction region which is formed as part of the loop such that, under a pre-defined load, the loop will break at that region.

U.S. Patent 6,286,190 to Friend entitled "Safety Coupler" discloses a safety coupler that includes a ring member, a hook member, and an annular member. The hook member has a rod portion that includes a pin and a pair of stops. The pin extends through first and second transverse openings in the ring member and the annular member, and rotatably couples the two members about an axis. When a force of certain magnitude is applied to one of the ring and hook members along the axis, one of the stops extends through the first and second transverse openings to decouple the ring member from the hook member. Once decoupled, the ring and hook members may be recoupled by installing a new annular member.

U.S. Patent 6,035,497 to Jackson entitled "Zipper Pull Tab" discloses a separable zipper pull tab that comprises a hook piece and a zipper pull tab body having an adhesive element or a shear pin. The hook piece has a connecting arm that is secured to a connecting arch of a slider and the zipper pull tab body includes a receiving cavity which receives a portion of the hook piece. Upon application of force sufficient to overcome the adhesive element, the zipper pull tab body may be separated from the hook piece.

U.S. Patent 5,867,877 to Patterson entitled "Self-Releasing Coupler" discloses a self-releasing or break-away coupler that includes a pair of jaws that form a fastener. Surrounding the jaws is a sleeve housing that deforms or moves laterally in response to a predetermined load to the jaws. Likewise, U.S. Patent 1,299,821 to Carpmill entitled "Hook" discloses a device which operates in a similar manner.

U.S. Patent 5,548,875 to Hart entitled "Safety Snap" discloses safety snap for restraining livestock that is releasable upon the application of a selected force by the animal to minimize the possibility and severity of injury to the animal. Application of the selected amount of force by the animal breaks a shear pin, unlatching the safety snap to release a lead rope. The safety snap remains attached to the halter.

The problems with these devices for children is that: (1) anomalies occur and/or the devices will physically break upon the application of increased loads by the child, (2) the devices require the replacement of certain parts after being separated or broken from the heavy load, and (3) if the devices can separate without breaking as a result of the application

of increased loads, the devices require complex latching and/or jaw mechanisms to accommodate such a separation.

The breaking problems presented in the above patents are also exhibited in U.S. Patent 6,591,461 and U.S. Patent Application US2002/0148078 to Salentine entitled "Connector With Strain Relief"; U.S. Patent 6,484,375 and U.S. Patent Application US2002/0189059 to Nishida entitled "Locking Retainer Device"; U.S. Patent 5,475,901 to Anscher entitled "Swiveling Snaphook"; and U.S. Patent 5,027,477 to Seron entitled "Break Away Lanyard". Additionally, the '477 Patent and U.S. Patent Application US2003/0121125 to Raia entitled "Breakaway Gripper-Style Lanyard Connector" with its breakaway elements also disclose the more complex latching and/or mechanism problems similar to that presented in the above patents. U.S. Patent 1,752,619 to Summerfeld entitled "Release Snap Construction" discloses the pulling apart of the end of two members but otherwise is not relevant to Applicant's invention.

Thus, there is a need and there has never been disclosed Applicant's unique child safety clip invention.

IV. OBJECTS OF THE INVENTION

It is the primary object of the present invention to provide a child safety clip that is designed to safely bend, deform, or flex in response to pressure or improper use. A related object of the present invention is to provide a child safety clip that does not result in anomalies or breaks due to the pressure or improper use.

Another related object of the present invention is to provide a child safety clip that, upon releasing to the pressure or succumbing to the force causing the clip to deform, the child safety clip utilizes a memory to cause it to resume its original shape for continued use.

Another object of the invention is to provide a child safety clip that utilizes unique latching and/or clasping mechanisms to accomplish its intended uses by children.

Still another object of the invention is to provide a child safety clip that is safe and easy to use.

Other objects of the present invention will become more apparent to persons having ordinary skill in the art to which the present invention pertains from the following description taken in conjunction with the accompanying drawings.

V. SUMMARY OF THE INVENTION

The present invention is a child safety clip which consists of two elongated, opposed legs adjoined by a bridging section. Each leg provides a loop which may be opened or closed by a latch or clasp mechanism. Also, if the user desires to open or close either loop of the legs without using the latch or clasp mechanism such as through the application of pressure or force, the child safety clip is designed to succumb to the pressure or force and permit the loops of the legs to bend, deform, or flex and the latch or clasp mechanisms to open, thereby, releasing the item held by the loops to the user. The child safety clip is manufactured from a material having a memory causing the affected clip to return to its original shape for continued use.

VI. BRIEF DESCRIPTION OF THE DRAWINGS

The Description of the Preferred Embodiment will be better understood with reference to the following figures:

Figure 1 is a top side perspective view of Applicant's inventive child safety clip.

Figure 2 is a bottom side perspective view of Applicant's inventive child safety clip.

Figure 3 is a front view of the child safety clip.

Figure 4 is a left side view of the child safety clip.

Figure 5 is a cross sectional view, taken along line 5-5 of Figure 3, of the child safety clip.

Figure 6 is a front view of the child safety clip depicting the loops being pulled apart upon the application of a pulling pressure or force from the user or a heavy load.

VII. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning first to Figure 1, there is illustrated a child safety clip 20. The child safety clip 20 is an elongated member comprised of a pair of opposed legs, namely, a first leg 22 and a second leg 24, and a bridging section 26 joining the first leg 22 and the second leg 24. In the preferred embodiment, the first leg 22, the second leg 24, and the bridging section 26 are made of a durable plastic material and integrally injection molded together.

The first leg 22 has a proximal end 28 and a distal end 30. The first leg 22 is divided into a hook 32 and an arm 34 which each extend outwardly from the proximal end 28. The hook 32 and the arm 34 connect at latch 36 for forming a large loop 38. The latch 36 is comprised of a pair of opposed wedge extensions 40 and 42 (Figure 2) on the hook 32. The opposed wedge extensions 40 and 42 form a lengthwise channel 44 between them to receive a protruding member 46 of the arm 34. In the preferred embodiment, upon the protruding member 46 of the arm 34 being received into the channel 44 of the hook 32 between the opposed wedge extensions 40 and 42, the latch 36 is formed. The opposed wedge extensions 40 and 42 and the protruding member 46 of the latch 36 coact to inhibit lateral movement of the hook 32 in relation to the arm 34 when the hook 32 is twisted. In this manner, the latch 36 secures the hook 32 to the arm 34 when the large loop 38 is in its latched position.

The second leg 24 has a proximal end 48 and a distal end 50. The second leg 24 has two opposed arm projections 52 and 54 extending outwardly from the proximal end 48. The arm projections 52 and 54 are joined to a ring 56 having a small loop 58 therein. The opposed arm projections 52 and 54 are strengthened by a filler portion 60 positioned between them and abutting the bridging section 26.

A clasp 62 is provided to enable the opening or closing of the ring 56. Alternatively, the clasp 62 may be identical to the latch 36 in the first leg 22 or the latch 36 may be identical to the clasp 62 in the second leg 24. The clasp 62 is comprised of reciprocal U-shaped jaws 64 and 66 (see also Figure 2) each having lips 67 and 69, respectively (Figure 3). The lip 67 of the U-shaped jaw 64 extends over the lip 69 of the U-shaped jaw 66 such that the U-shaped jaw 64 becomes locked with the U-shaped jaw 66 as illustrated in Figure 2. The reciprocal U-shaped jaws 64 and 66 then coact to provide the clasp 62 that restricts the separation of the arm projections 52 and 54 from each other when the ring 56 is closed.

Figure 4 illustrates the side view of the child safety clip 20 and, in particular, shows the tapered width of the child safety clip 20. In the preferred embodiment, the first leg 22 has a width that tapers outwardly from the proximal end 28 at the bridging section 26 to the distal end 30. The second leg 24 has a width 25 that remains substantially constant from the proximal end 48 at the bridging section 26 to the distal end 50. Preferably, the width 25 of the second leg 24 is smaller than the tapered width of the first leg 22.

In use, the large loop 38 of the first leg 22 and the small loop 58 of the second leg 24 are intended to receive and retain any article of clothing having a closed loop connector such as a pants belt loop, a jacket zipper, a backpack, a water bottle, lunch box, or any other item possibly contemplated by children using their fanciful and experimental minds. In a non-limiting example as illustrated in Figure 6, the large loop 38 contains a closed loop 70 and the small loop 58 contains a closed loop 72 which is attached to a small thermos 74. The latch 36 permits the controlled opening and closing of the first leg 22 and the clasp 62 permits the controlled opening and closing of the second leg 24. Preferably, both the large loop 38 and the small loop 58 will be closed and in simultaneous use with each attached to different items. In this manner one loop will serve as the anchoring loop to support the child safety clip 20 while the other loop will serve as the holding loop for the desired item to be carried or retained. In the example provided, the large loop 38 is identified as the anchoring loop while the small loop 58 is identified as the holding loop in which the small thermos 74 is the desired item being carried or retained.

In the closed configuration, the latch 36 of the large loop 38 is closed or, in other words, the protruding member 46 of the arm 34 is received into the channel 44 of the hook 32 between the opposed wedge extensions 40 and 42. To properly open the large loop 38, the hook 32 and the arm 34 are pulled away from one another such that the protruding member 46 of the arm 34 is released from the channel 44 between the opposed wedge extensions 40 and 42 of the hook 32.

Likewise, in the closed configuration, the clasp 62 of the small loop 58 is also closed, or in other words, the lip 67 of the U-shaped jaw 64 of arm projection 52 extends over the lip 69 of the U-shaped jaw 66 of arm projection 54 such that the U-shaped jaw 64 becomes locked with the U-shaped jaw 66. To properly open the small loop 58, the U-shaped jaws of one or both of the arm projections must be pulled away from the other such that the lip 67 of the U-shaped jaw 64 of arm projection 52 is no longer over or in contact with the lip 69 of the U-shaped jaw 66 of arm projection 54.

If a child desires to remove an item anchored by one loop or held by the other loop and does so without properly opening the corresponding latch 36 or clasp 62, the child safety clip 20 will initially provide a certain resistance but is designed to ultimately succumb to the child's pressure and release either itself or the attached product without breaking into different pieces or cracking to expose sharp edges, any of which may be dangerous or injurious to anyone especially children. In this design for example, upon the child applying an increasing force to the clip 22 in the direction of arrow "A", the latch 36 releases separating the hook 32 from the arm 34 to create an opening 76. The hook 32 or the arm 34 of the first leg 22 bends or flexes, thereby, increasing the size of the opening 76 depending upon the magnitude of the force. In this manner, depending upon the force, the anchored or held item (i.e., closed loop 70) may be or is released from the large loop 38 of the child safety clip 20. With respect to the second leg 24, the reciprocal U-shaped jaws 64 and/or 66 will bend or flex, thereby, disengaging one from the other to create an opening 78. Again

depending on the magnitude of the force, the anchored or held item (i.e., closed loop 72) may be or is released from the small loop 58 of the child safety clip 20, thereby, enabling the user to obtain the small thermos 74 without breaking the ring 56 of the second leg 24. The plastic from which the child safety clip 20 is made has a memory to cause the clip to resume its original shape to be used again after the force causing the deformation is released.

The material used to manufacture the clip 22 is preferably a durable plastic such as poly-propylene. This plastic is flexible enough to deform to form the openings 76 and 78 without the safety clip 20 breaking. This minimizes the possibility of forming dangerous sharp edges or small pieces upon the application of large forces to the clip 20. It also provides a memory so that the clip 20 can assume its original shape upon the removal of the force.

Thus, there has been provided a unique child safety clip as described herein. While the invention has been described in conjunction with a specific embodiment, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it in intended to embrace all such alternatives, modifications and variations as fall within the spirit and scope of the invention.